

Artemis ACT

ACT (Artemis Comparison Tool) is a viewer based on Artemis that allows examining pair-wise genome DNA sequence comparisons. IMG only creates data files that are compatible with Artemis ACT. Moreover, metagenomes are supported by this tool.

In order to run Artemis ACT, users are required to have the following:

- Java: <http://www.java.com/en/>
- Artemis ACT: <http://www.sanger.ac.uk/science/tools/artemis-comparison-tool-act>

The first step of using ACT involves selecting from 2 to 5 genomes of interest, as illustrated in Figure 1(i), where *Ralstonia eutropha* JMP134 and *Ralstonia insidiosa* ATCC 49129 are selected from the list of finished bacterial genomes. Two filters (Sequencing Status, Domain) can be used to select the list of all isolate genomes available in IMG.

Please select 2 to 5 genomes.

Sequencing Status

Finished

☒ List ☐ Tree

Search for: <enter a genome name to search>

- Pyropiristinus bacterium T2.1 (B) [F]
- Rahnella aquatilis CIP 78.65 (B) [F]
- Rahnella aquatilis HX2 (B) [F]
- Rahnella sp. Y9602 (B) [F]
- Ralstonia eutropha H16 (B) [F]
- Ralstonia eutropha JMP134 (B) [F]**
- Ralstonia insidiosa ATCC 49129 (B) [F]**
- Ralstonia mannitolilytica SN82F48 (B) [F]
- Ralstonia mannitolilytica SN83A39 (B) [F]
- Ralstonia pickettii 12D (B) [F]
- Ralstonia pickettii 12J (B) [F]
- Ralstonia pickettii DTP0602 (B) [F]

Domain

Bacteria

Selected: 2

Add >

Add All >>

< Remove

<< Remove All

(i)

Selected Genomes

Please select 2 to 5 genomes: 2 selected

- Ralstonia eutropha JMP134 (B) [F]
- Ralstonia insidiosa ATCC 49129 (B) [F]

Next

Pairwise Selection

Genomes will be compared pairwise. E.g. G1, G2, G3 comparison will be (G1 vs G2) and (G2 vs G3).
 Press *Update* button to update order.
 Press *Next* button to view Genome's contigs.

Order	Genome ID	Genome Name
1	637000229	Ralstonia eutropha JMP134
2	2721755751	Ralstonia insidiosa ATCC 49129

Update

Next

(ii)

Figure 1. Artemis ACT: Genome Selection and Pairwise Selection.

The selected genomes are compared in pairs, where the pairs are determined by the order in which the genomes were selected. For example, if genomes G1, G2, G3, and G4 were selected, the G1 will be compared to G2, G2 will be compared to G3, and G3 will be compared to G4. The pairwise comparisons can be adjusted using the Pairwise Selection page, as shown in Figure 1(ii). Users can reorder the selected genomes by changing the values in the "Order" column and click the "Update" button.

After the user clicks the "Next" button, all the scaffolds and contigs of the selected genomes are displayed in the Contig Reorder page, as illustrated in Figure 2(i). This page can be used to remove the contigs that should not be included in the comparison, as well as for reordering the contigs that are included. To remove any contigs in the analysis, simply check the corresponding "Ignore" column. Updating values in the "Order" column allows selected contigs to be reordered. Click the "Update" button to confirm the removal and/or reordering, and click the "Next" button to continue.

Contig Reorder - Artemis - ACT

Select ignore to remove contig.
Press Update button to update order and remove any selected contigs.
Press Next button to create files for ACT.

Ralstonia eutropha JMP134

Select All
Clear All

Ignore	Order	Ext Accession	Scaffold Name	Seq. Length
<input type="checkbox"/>	1	NC_007336	Ralstonia eutropha JMP134 megaplasmid: NC_007336	634917
<input type="checkbox"/>	2	NC_007337	Ralstonia eutropha JMP134 plasmid 1: NC_007337	87688
<input type="checkbox"/>	3	NC_007347	Ralstonia eutropha JMP134 chromosome 1: NC_007347	3806533
<input type="checkbox"/>	4	NC_007348	Ralstonia eutropha JMP134 chromosome 2: NC_007348	2726152

Ralstonia insidiosa ATCC 49129

Select All
Clear All

Ignore	Order	Ext Accession	Scaffold Name	Seq. Length
<input type="checkbox"/>	1	Ga0175826_11	Ralstonia insidiosa ATCC 49129 : Ga0175826_11	3921238
<input type="checkbox"/>	2	Ga0175826_12	Ralstonia insidiosa ATCC 49129 : Ga0175826_12	50770
<input type="checkbox"/>	3	Ga0175826_13	Ralstonia insidiosa ATCC 49129 : Ga0175826_13	1887060
<input type="checkbox"/>	4	Ga0175826_14	Ralstonia insidiosa ATCC 49129 : Ga0175826_14	317936

Update
Next

(i)

Creating Artemis ACT Data Files

ACT Data Files

[637000229 fna file](#)
[2721755751 fna file](#)
[637000229 GBK file](#) (Sequence File 1)
[2721755751 GBK file](#) (Sequence File 2)
[Megablast out file](#) (Comparison File 1)

You can now download the above Artemis ACT data files.

(ii)

Figure 2. Artemis ACT: Contig Reordering and Creating Data Files.

Three types of output files will be generated for downloading (See Figure 2(ii):

- DNA sequence fna files.
- Genbank GBK files.
- Metablast comparison output file.

Reference: Carver, T.J., Rutherford, K.M., Berriman, M. et al. (2005) ACT: the Artemis Comparison Tool. *Bioinformatics* 21(16): 3422-3423.